

HW : Due Monday, 11/7

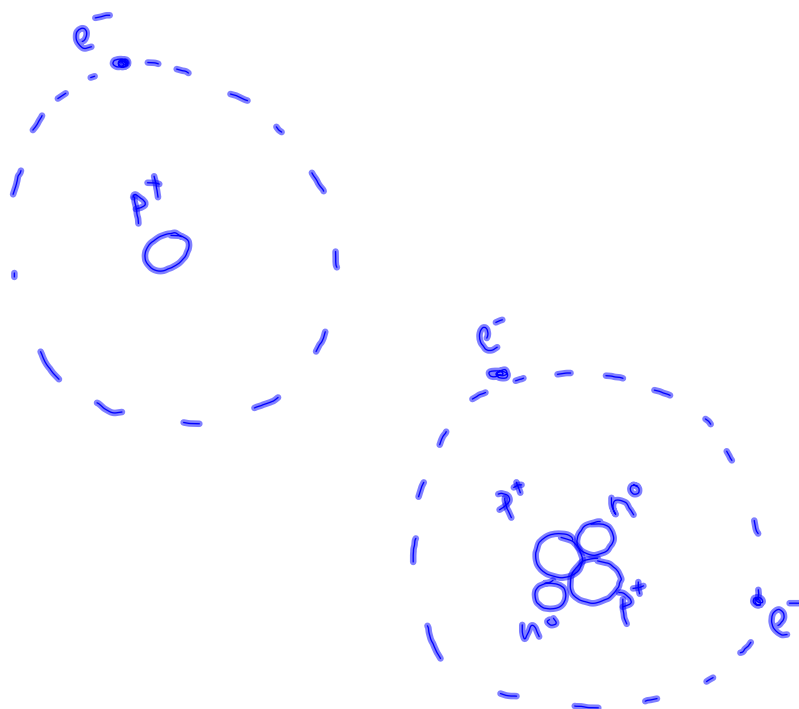
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What do you already know about electricity?

- Conductors
- resistors, Ohms
- Current
- Coulomb
- eV, V, potential difference
- batteries
- energy crisis
- solenoids, toroids
- +/- charge
- e^-
- AC, DC
- open/closed circuits
- transfer of e^-
- static electricity
- Amps
- parallel/series circuits
- Conventional current

Atomic Structure:



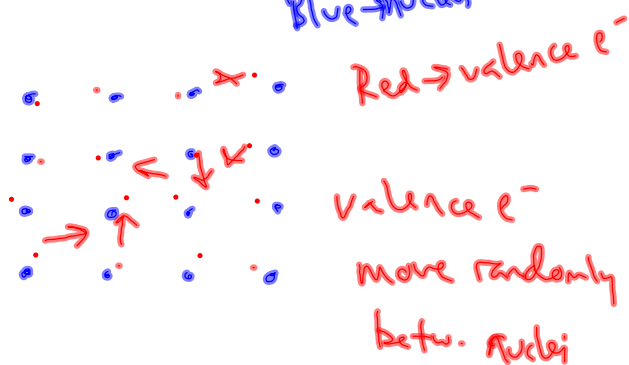
- Valence e^-

- Ways to bond:

- Covalent \rightarrow 2 non-metals

- Ionic \rightarrow metal/non-metal

- Metallic \rightarrow only metals

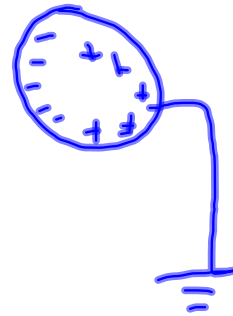
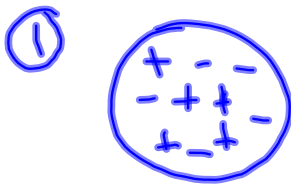


- Conductors v. Insulators
v. Semiconductors
 - Conductor \rightarrow type of material that allows e^- to move freely
 - \rightarrow metals are the best, b/c metallic bonding
 - Insulator \rightarrow material that does NOT allow e^- to flow easily
 - \rightarrow non-metals, especially gases
 - Semiconductors \rightarrow sometimes acts as a conductor, sometimes as an insulator
 - \rightarrow metalloids, especially Si and Ge
- Law of Conservation of Charge:
 - Charge always transferred, not created or destroyed

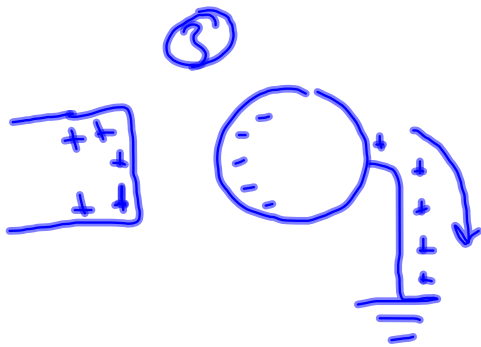
· Charging Objects:

- Contact

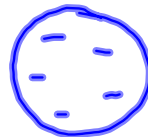
- Induction



Symbol for attaching
something to ground



④



Remove ground
attachment,
then remove rod

• Coulomb's Law:

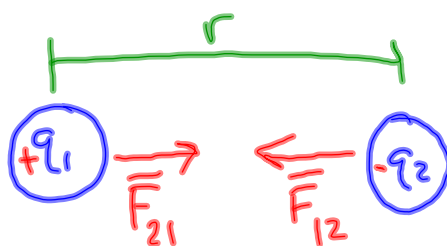
$$F_e = k_e \frac{|q_1| |q_2|}{r^2}$$

k_e = Coulomb constant = $8.99 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2$

F = force (N)

q = charge (C)

r = distance bet. charges (m)



$$\vec{F}_{12} = k_e \frac{q_1 q_2}{r^2}$$

— We can find net force on a particle.

$$\vec{F}_1 = \vec{F}_{21} + \vec{F}_{31} + \vec{F}_{41}$$

